Krizner Urmeneta
201808911

Activity 6 Documentation

Listing networks

```
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker network ls
NETWORK ID      NAME     DRIVER    SCOPE
fe9821b7f704    bridge   bridge    local
386ae5c42727    host     host      local
4690cdccbab4    none     null      local
```

The default 'bridge' network

```
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker network inspect bridge
[
    {
        "Name": "bridge",
        "Id": "fe9821b7f704cc8dc8c7a651780fa80029ea35ed6208cdb467ba4dec5750a647",
        "Created": "2021-05-18T07:35:17.8220449Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {
            "com.docker.network.bridge.default_bridge": "true",
            "com.docker.network.bridge.enable_icc": "true",
            "com.docker.network.bridge.enable_ip_masquerade": "true",
            "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
            "com.docker.network.bridge.name": "docker0",
            "com.docker.network.driver.mtu": "1500"
        },
        "Labels": {}
    }
]
```

After running 'ping' container:

```
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker run --rm -d --name dummy
 krizner/ping:1.0
a748065514258028ee2c8104c55a5ac83ea70edb2d3bd68df112de88e464d358
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker network inspect bridge
[
    {
        "Name": "bridge",
        "Id": "fe9821b7f704cc8dc8c7a651780fa80029ea35ed6208cdb467ba4dec5750a647",
        "Created": "2021-05-18T07:35:17.8220449Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {
            "a748065514258028ee2c8104c55a5ac83ea70edb2d3bd68df112de88e464d358": {
                "Name": "dummy",
                "EndpointID": "142c54f82767c519fde0b4ae63e8928ecf1d0b3b3f2b015828ca6b2c7e332f54",
                "MacAddress": "02:42:ac:11:00:02",
                "IPv4Address": "172.17.0.2/16",
                "IPv6Address": ""
            }
        },
        "Options": {
            "com.docker.network.bridge.default_bridge": "true",
            "com.docker.network.bridge.enable_icc": "true",
            "com.docker.network.bridge.enable_ip_masquerade": "true",
```

```
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker run --rm -d -e PING_TARG
ET=172.17.0.2 --name pinger krizner/ping:1.0
606c537fd8850ad3a5654daad41eae8a29a7d58551ee1f6fde6952c509fa56ad
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker ps
CONTAINER ID   IMAGE            COMMAND               CREATED          STATUS               PORTS      NAMES
606c537fd885   krizner/ping:1.0   "sh -c 'ping $PING_T…"   11 seconds ago   Up 8 seconds                    pinger
a74806551425   krizner/ping:1.0   "sh -c 'ping $PING_T…"   2 minutes ago    Up About a minute               dummy
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker logs pinger
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data.
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.166 ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.097 ms
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.102 ms
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.101 ms
64 bytes from 172.17.0.2: icmp_seq=5 ttl=64 time=0.111 ms
64 bytes from 172.17.0.2: icmp_seq=6 ttl=64 time=0.105 ms
64 bytes from 172.17.0.2: icmp_seq=7 ttl=64 time=0.098 ms
64 bytes from 172.17.0.2: icmp_seq=8 ttl=64 time=0.101 ms
64 bytes from 172.17.0.2: icmp_seq=9 ttl=64 time=0.099 ms
64 bytes from 172.17.0.2: icmp_seq=10 ttl=64 time=0.104 ms
64 bytes from 172.17.0.2: icmp_seq=11 ttl=64 time=0.158 ms
64 bytes from 172.17.0.2: icmp_seq=12 ttl=64 time=0.154 ms
```

Running 'ping' with the 'dummy' as the target causing error:

```
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker run --rm -d -e PING_TARG
ET=dummy --name pinger krizner/ping:1.0
docker: Error response from daemon: Conflict. The container name "/pinger" is already in use by container "6e9cbd1e97486d5adf443d2607b1
b2fa6cf16b2ccf0d04235dbf19ce5647a0d0". You have to remove (or rename) that container to be able to reuse that name.
See 'docker run --help'.
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking>
```

Managing custom networks

```
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker network create skynet
fde85daef2c876202c77799859fd7f9b333e3a19535e7679624ce38804761c2b
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker network inspect skynet
[
    {
        "Name": "skynet",
        "Id": "fde85daef2c876202c77799859fd7f9b333e3a19535e7679624ce38804761c2b",
        "Created": "2021-05-18T11:12:59.8658121Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {}
    }
]
```

Adding containers to a network

Run 'ping' container but assigning it to a network

```
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker network ls
NETWORK ID      NAME       DRIVER    SCOPE
fe9821b7f704    bridge     bridge    local
386ae5c42727    host       host      local
4690cdccbab4    none       null      local
fde85daef2c8    skynet     bridge    local
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker run --rm -d --network sk
ynet --name dummy krizner/ping:1.0
15d6f6042b4eb09ce0e19dcbdaa6587a04e9853bca7955dde73911580c37fc52
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker run --rm -d --network sk
ynet -e PING_TARGET=dummy --name pinger krizner/ping:1.0
c9e9e1c7b0a11df1f6b7e8d130e62c28543892b167798af9c1f0a38b4b515b94
PS C:\Users\Krizzy\Documents\3rdYear2ndSem\CoE197\Week 10\ME8_Containerization_and_Docker\6-networking> docker logs pinger
PING dummy (172.18.0.2) 56(84) bytes of data.
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=1 ttl=64 time=0.149 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=2 ttl=64 time=0.102 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=3 ttl=64 time=0.115 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=4 ttl=64 time=0.122 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=5 ttl=64 time=0.108 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=6 ttl=64 time=0.111 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=7 ttl=64 time=0.110 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=8 ttl=64 time=0.175 ms
```

Connecting between containers in a network

```
PS C:\WINDOWS\system32> docker run --rm -d -it --name widgetdb -e POSTGRES_PASSWORD=password --network skynet -p 5432 postgres
a72263544803ac4890dfac632aa4bc8bcbe41370c9e205088ce3f2a43bca3c9b
PS C:\WINDOWS\system32> docker run --rm -d -it --name gadgetdb -e POSTGRES_PASSWORD=password --network skynet -p 5432 postgres
f609e49ce7b9b7b2e779b81e27571513f6f7b7e20452cdc4960adac271b7bc6b
PS C:\WINDOWS\system32>
PS C:\WINDOWS\system32> docker ps
CONTAINER ID   IMAGE      COMMAND               CREATED          STATUS          PORTS                     NAMES
f609e49ce7b9   postgres   "docker-entrypoint.s…"  6 seconds ago   Up 3 seconds    0.0.0.0:57085->5432/tcp   gadgetdb
a72263544803   postgres   "docker-entrypoint.s…"  22 seconds ago  Up 19 seconds   0.0.0.0:57084->5432/tcp   widgetdb
PS C:\WINDOWS\system32>
```

```
PS C:\WINDOWS\system32> docker exec -it widgetdb /bin/bash
root@a72263544803:/# psql -U postgres
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# \q
root@a72263544803:/# psql -U postgres -h gadgetdb
Password for user postgres:
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# \q
root@a72263544803:/# exit
exit
PS C:\WINDOWS\system32> docker stop widgetdb gadgetdb
widgetdb
gadgetdb
PS C:\WINDOWS\system32>
```

Binding ports to the host

```
PS C:\WINDOWS\system32> docker run --rm -d -it --name widgetdb -e POSTGRES_PASSWORD=password --network skynet -p 5432:5432 postgres
82c4ca53a4c33d36259c8c0a94e6fa1a0697e74ed8df1c57ce68886d8e9221c3
PS C:\WINDOWS\system32> docker ps
CONTAINER ID   IMAGE      COMMAND               CREATED         STATUS        PORTS                                         NAMES
82c4ca53a4c3   postgres   "docker-entrypoint.s…"  5 seconds ago  Up 1 second   0.0.0.0:5432->5432/tcp, :::5432->5432/tcp   widgetdb
PS C:\WINDOWS\system32>  psql -U postgres -h localhost
```